UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,022	02/14/2002	John Rhoades	0120-025	5634

42015   7590   01/30/2008

POTOMAC PATENT GROUP PLLC
P. O. BOX 270
FREDERICKSBURG, VA 22404

EXAMINER
FILIPCZYK, MARCIN R

ART UNIT	PAPER NUMBER
2163	

NOTIFICATION DATE	DELIVERY MODE
01/30/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

tammy@ppglaw.com

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _15 November 2007_.

2a)☒ This action is **FINAL.** 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under _Ex parte Quayle_, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-13,15-25 and 37_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-13,15-25 and 37_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _07 July 2005 and 15 November 2007_ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _11/19/07_.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

Response to Amendment

This action is responsive to Applicant's response submitted on November 15, 2007.

Claims 1-13, 15-25 and 37 are now pending.

To expedite the process of examination Examiner requests that all future correspondences in regard to overcoming prior art rejections or other issues (e.g. amendments, 35 U.S.C. 112, objections and the like) set forth by the Examiner that Applicants provide and link to the most specific page and line numbers of the disclosure where the best support is found (see 35 U.S.C. 132).

Specification

The amendment filed November 15, 2007 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The new matter comprising "The memory banks 212a, 212b respectively contain look up table 213a, 213b" found on page 2 of the Amendment. In addition, the same changes have been added to figure 2 including "look up table" and elements "213a" and "213b".

Applicant is required to cancel the new matter in the reply to this Office Action.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation of plurality of look up state machines connected in parallel with the same look up table must be shown or the feature(s) canceled from the claim(s). Note, figure 1 shows a look up table but is not interrelated with figure 2. No new matter should be entered.

The drawings are rejected/objected for introducing new matter. See the paragraph above, under section "Specification" for more information.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the **first paragraph** of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-13, 15-25 and 37 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contain subject matter which was

not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1 and 21-23 comprise the limitation "concurrently perform a look up of different respective search requests in the same look up table... all having concurrent access to all the entries in the look up table", was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 2-13, 15-20, 24, 25 and 37 depend from claims 1, and 21-23 respectively, and are therefore rejected on the same merits.

Claim Rejections - 35 USC § 112

The following is a quotation of the **second paragraph** of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1-13, 15-25 and 37, the aspect of "plurality of look up state machines... configured to concurrently perform a look up of different respective search requests... the state machines having concurrent access to all the entries in the look up table" is indefinite. This feature could cause an overload, however the claimed system/method does not teach such a feature or handle such a scenario.

Regarding claims 2-13, 15-20, 24, 25 and 37 which depend from claims 1, 21, 22 and 23

respectively, are rejected on the same basis.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 21-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Tock et

al (U.S. Patent No. 6,115,802).

Regarding claims 1 and 21-25, Tock discloses a system and method, wherein a look up

engine (fig. 2a and 3 and abstract) comprising a storage means for storing a look up table, said

look up table comprising a plurality of entries, each entry comprising a value, an associated key

value (fig. 4), such that, in operation, a look up is carried out by outputting and storing a value

which is associated with the stored key value which matches an input key value (fig. 3, items 309

and 313), the look up engine comprising a plurality of look up state machines connected in

parallel (fig. 3) to enable multiple look ups of different search requests to be carried out in the

same look up table concurrently (col. 9, lines 2-8), the state machines all having concurrent

access to all the entries in the look up table when they perform a look up.

(Note: Hash table is intended for multi-threaded environment, col. 6, lines 65-67)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1-13, 15-25 and 37 are rejected under 35 U.S.C. 103(a) as best as the Examiner is

able to ascertain as being unpatentable over Greene (U.S. Patent No 6,631419) in view of

Wilkinson III et al (U.S. Patent No. 6,014,659).

Regarding claims 1 and 21-25, Greene discloses a system and method, wherein a look up

engine (fig. 1, 106, Greene) comprising a storage means for storing a look up table, said look up

table comprising a plurality of entries (fig. 1, 108, Greene), each entry comprising a value, an

associated key value (col. 7, lines 32-34, Greene), such that, in operation, a look up is carried out

by outputting and storing a value which is associated with the stored key value which matches an

input key value from different search requests (Fig. 1, item 102, values D1, D2 and col. 4, lines

49-52, col. 7, lines 34-36, Greene), the look up engine being capable to perform multiple look

ups of the same look up table concurrently (fig. 1, 106 and 108, and col. 4, lines 55-67, col. 7,

lines 10-18 and col. 31, lines 60-67, Greene) the state machines all having concurrent access to

the entries in the entire table when they perform a look up (fig. 1, item 108 and col. 8, lines 12-

35), but does not explicitly teach the look up engine comprises a plurality of look up state

machines connected in parallel.

(*Note: Arrays or table [A1, A2, A3] comprises entries with prefixes of a preset length, wherein prefixes of less than 22-bits and prefixes greater than 22-bits are searched concurrently by portion of a search key*)

However, search engines are notoriously well known to comprise multiple state machines to handle multitasking. For instance, Wilkinson discloses prefix matching database searching (see title and abstract, Wilkinson) where he teaches a number of registers and elementary state machines operating concurrently, collectively known as a search engine, to directly access memory (fig. 3, item 40, col. 8, lines 2-4 and col. 15, lines 21-25, Wilkinson). Hence, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Greene and Wilkinson systems by modifying Greene's look up engine to include the plurality of look up state machines taught by Wilkinson to support Greene's multiple input strings and multiple memories to operate concurrently as suggested by Greene (col. 31, lines 60-64, Greene) and taught by Wilkinson.

(*Note: a table may be partitioned to a plurality of tables, table and tables are interchangeable, hence, performing operations on many tables is equivalent to performing operations on one table*)

Regarding claim 2, Greene/Wilkinson teach entries are stored in a trie structure (col. 7, lines 27-37, Wilkinson).

Regarding claim 3, Greene/Wilkinson teach the trie structure is a PATRICIA trie structure (col. 3, lines 15-22 and 30-58, Greene).

Regarding claim 4, Greene/Wilkinson teach input and output buffers (fig. 1, item 102 and col. 6, lines 47-56, Greene).

Regarding claims 5 and 6, Greene/Wilkinson teach distributing and collecting the input key values and respective outputs (fig. 1, items 14, 20, 22 and 40, col. 9, lines 63-66, Wilkinson).

Regarding claims 7 and 8, Greene/Wilkinson teach the length of the look up values and key values is fixed and/or variable (fig. 17 and col. 2, lines 7-21, Greene).

Regarding claim 9, Greene/Wilkinson teach tagging keys (col. 26, lines 32-49, Greene).

Regarding claim 10, Greene/Wilkinson teach storing an identity of the requestor such that the output value is sent to the correct location (fig. 3, item 14, Wilkinson).

Regarding claims 11-13, Greene/Wilkinson teach a type of error and identifying the location of bits that are mismatched (fig. 5, BIT MASK, and col. 31, lines 14-22, Wilkinson).

Regarding claim 37, Greene/Wilkinson teach an entry further comprises a skip value (figs. 1-5 and col. 7, lines 36-50 and col. 8, lines 36-50, Greene), and the input key comprises a plurality of bits such that, if the skipped bits of the input key value and the associated skip value

mismatches, an error message is output to indicate lookup failure (col. 9, lines 10-15 and 35-48,

Greene).

(*Note: if there is no match, an error flag may be displayed*)

Regarding claims 15-20, Greene/Wilkinson teach internal/external memory and

partitioning the memory comprising plurality of entries (fig. 1, item 108: M1, M2, M3 and col. 7,

lines 14-18, Greene.

Response to Arguments

Applicant's amendment and arguments filed November 15, 2007 have been fully

considered but they are not persuasive. The arguments and responses are listed below.

Applicant argues that previous objections and rejections have been overcome by the

current amendment to the claims, drawings and specification.

Examiner disagrees. With regard to the specification and drawings, the new matter added

comprising mainly a "look up table" in the memory banks is rejected under new subject matter,

above. Applicant's disclosure does not teach the newly added elements, it actually teaches away

from all the state machines having a concurrent access to all the entries of a table on page 13 of

the specification wherein it is disclosed and illustrated in figure 2 that memory banks are parallel

independent memory banks. As such, new subject matter rejections are raised.

The added new claimed feature is also not supported by the disclosure and is rejected

accordingly. Applicant has cited page 2, line 40 to page 3, line 9 for support but the cited

sections do not teach the new added features, the cited sections do not seem related to the argued

elements and the numbering of lines does not seem adequate.

Applicant argues that Tock does not teach state machines on page 12 of the response.

Examiner disagrees. Threads disclosed by Tock (col. 9, lines 2-9) are processes

performing instructions directed by processors (fig. 3).

Applicant argues that Greene does not process data concurrently.

Examiner disagrees. Arrays or table [A1, A2, A3] comprises entries with prefixes of a

preset length, wherein prefixes of less than 22-bits and prefixes greater than 22-bits are searched

concurrently by portion of a search key (col. 8, lines 29-35). Multiple field look ups are

performed on a table represented by three memories M1-M3 which comprise data values (col.

31, lines 61-64). Searching/looking up data is performed concurrently/simultaneously by

concurrent processing to handle multi-tasking, see the disclosure of simultaneous processing in

Greene in col. 8, lines 29-35. Further, Examiner notes that overlapping thread processing is

equivalent to concurrent processing. Hence, multiple queries are being processed simultaneously

(col. 8, lines 29-35).

Applicant requests that Examiner provide support for multiple state machines to handle

multitasking.

See rejection with regard to Tock et al, above and Schroeder publication, paragraph 24.

With respect to Wilkinson, the system teaches state machines operate concurrently (col. 15, lines 20-27) to concurrently access memory (col. 21, lines 35-57). Concurrent processing mandates handling more than one request. Further, overlapping thread processing is equivalent to concurrent processing. Greene in view of Wilkinson disclose performing multiple look ups on the same table.

With respect to all the pending claims 1-13, 15-25 and 37, Examiner respectfully traverses Applicant's assertion based on the discussion and rejections cited above.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following prior art teaches a parallel look up system:

U.S. Pub. No. 2003/0004921 of Schroeder; figs 2 and 3, and par. [0024].

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.
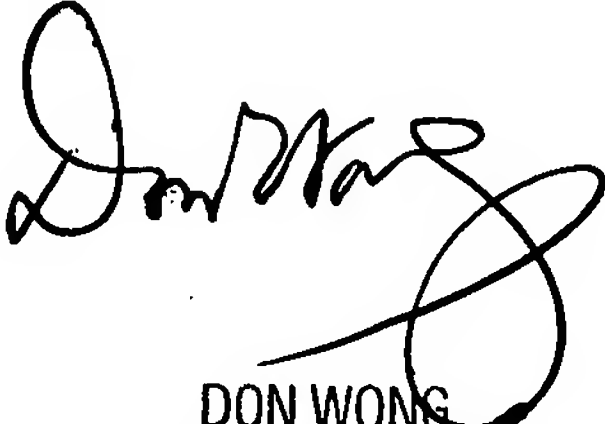
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc R. Filipczyk whose telephone number is (571) 272-4019. The examiner can normally be reached on Mon-Fri, 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MF
January 23, 2008

DON WONG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100